

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): An optical fiber coupler comprising:

a plurality of optical fibers including a λ_1 -band optical fiber and a λ_2 -band optical fiber, fused together at a fusion-elongated portion, wherein in the fusion-elongated portion, each of the plurality of optical fibers tapers to a respective narrower outer diameter relative to an outer diameter of the optical fiber outside the fusion-elongated portion,

wherein optical fibers in the plurality of optical fibers are designed such that when the optical fibers are individually fusion-elongated at an elongating ratio in a range of 50% or less, the optical fibers have a propagation constant difference therebetween of 1×10^{-4} rad/ μm or smaller,

wherein the λ_1 -band is different from the λ_2 -band, and

wherein a propagation constant difference between the optical fibers that have been fusion-elongated to constitute the optical fiber coupler is 10^{-4} rad/ μm or smaller.

2. (withdrawn): An optical fiber coupler comprising:

a plurality of optical fibers including a λ_1 -band optical fiber and a λ_2 -band optical fiber, fused together at a fusion-elongated portion, wherein, in the fusion-elongated portion, each of the

plurality of optical fibers tapers to a respective narrower outer diameter, relative to an outer diameter of the optical fibers outside the fusion-elongated portion,

wherein the λ_1 -band is different from the λ_2 -band, and

wherein at least outside the fusion-elongated portion, the λ_1 -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 0.98 μm ,

wherein at least outside the fusion-elongated portion, the λ_1 -band optical fiber comprises a first core, a second core surrounding the first core and having a radius within the range of 10 μm or greater, and a cladding surrounding the second core, and

wherein a relative refractive-index difference of the second core and the cladding is 0.1% or smaller.

3. (withdrawn): An optical fiber coupler according to claim 2, wherein a relative refractive-index difference of the first core and the cladding is within a range from 0.7% to 0.9%.

4. (withdrawn): An optical fiber coupler according to claim 3, wherein the λ_2 -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 1.55 μm .

5. (withdrawn): An optical fiber coupler according to claim 2, wherein a relative refractive-index difference of the first core and the cladding is within a range from 0.6% to 0.8%.

6. (withdrawn): An optical fiber coupler according to claim 5, wherein the λ_2 -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 1.55 μm .

7. (withdrawn): An optical fiber for an optical fiber coupler comprising:
a first core;
a second core surrounding the first core and having a radius within the range of 10 μm or greater; and
a cladding surrounding the second core,
wherein a relative refractive-index difference of the second core and the cladding is 0.1% or smaller, and
wherein the optical fiber for the optical fiber coupler is a single mode optical fiber at a wavelength in the vicinity of 0.98 μm .

8. (withdrawn): An optical fiber for an optical fiber coupler according to claim 7, wherein a relative refractive-index difference of the first core and the cladding is within a range from 0.7% to 0.9%.

9. (withdrawn): An optical fiber for an optical fiber coupler according to claim 7, wherein the refractive-index difference of the first core and the cladding is within a range from 0.6% to 0.8%.

10. (withdrawn): An optical fiber coupler comprising:

a λ_1 -band optical fiber having a first core with a radius of r_1 , a second core with a radius of r_2 surrounding the first core, and a cladding surrounding the second core;

a λ_2 -band optical fiber including a core with a radius of r_3 , and a cladding surrounding the core; and

a fusion-elongated portion where the λ_1 -band optical fiber and the λ_2 -band optical fiber are fused together, each of the optical fibers in the fusion-elongated portion tapering to a respective narrower outer diameter, relative to an outer diameter of the optical fibers outside the fusion-elongated portion,

wherein the λ_1 -band is lower in wavelength than the λ_2 -band, and

wherein $r_1 < r_3 \leq r_2$.

11. (withdrawn): An optical fiber coupler according to claim 10, wherein a propagation constant difference between the λ_1 -band optical fiber and the λ_2 -band optical fiber is 10^{-4} rad/ μm or smaller.

12. (withdrawn): An optical fiber coupler according to claim 10, wherein a relative refractive-index difference of the second core and the cladding of the λ_1 -band optical fiber is 0.1% or smaller.

13. (withdrawn): An optical fiber coupler according to claim 10, wherein a relative refractive-index difference of the first core and the cladding of the λ_1 -band optical fiber is within a range from 0.7% to 0.9%.

14. (withdrawn): An optical fiber coupler according to claim 10, wherein said λ_1 -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 0.98 μm , and said λ_2 -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 1.55 μm .

15. (new): An optical fiber coupler as recited in claim 1,
wherein at least outside the fusion-elongated portion, is a single mode optical fiber at a wavelength of about 0.98 μm ,
wherein at least outside the fusion-elongated portion, the λ_1 -band optical fiber comprises a first core, a second core surrounding the first core and having a radius of 10 μm or greater, and a cladding surrounding the second core, and
wherein a relative refractive-index difference of the second core and the cladding is 0.1% or smaller.

16. (new): An optical fiber coupler according to claim 15, wherein a relative refractive-index difference of the first core and the cladding is within a range from 0.6% to 0.9%.

17. (new): An optical fiber coupler according to claim 16, wherein the λ_2 -band optical fiber is a single mode optical fiber at a wavelength of about 1.55 μm .

18. (new): An optical fiber coupler as recited in claim 1,
wherein the λ_1 -band optical fiber has a first core with a radius of r_1 , a second core with a radius of r_2 surrounding the first core, and a cladding surrounding the second core;
wherein the λ_2 -band optical fiber includes a core with a radius of r_3 , and a cladding surrounding the core;
wherein the λ_1 -band is lower in wavelength than the λ_2 -band, and
wherein $r_1 < r_3 \leq r_2$.

19. (new): An optical fiber coupler according to claim 18, wherein a propagation constant difference between the λ_1 -band optical fiber and the λ_2 -band optical fiber is 10^{-4} rad/ μm or smaller.

20. (new): An optical fiber coupler according to claim 18, wherein a relative refractive-index difference of the second core and the cladding of the λ_2 -band optical fiber is 0.1% or smaller.

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21. (new): An optical fiber coupler according to claim 18, wherein a relative refractive-index difference of the first core and the cladding of the λ_1 -band optical fiber is within a range from 0.7% to 0.9%.

22. (new): An optical fiber coupler according to claim 18, wherein said λ_2 -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 0.98 μm , and said λ_2 -band optical fiber is a single mode optical fiber at a wavelength in the vicinity of 1.55 μm .